Economic Globalization and Labor Productivity: An Application of Autoregressive Distributed Lag (ARDL) Bounds Testing Approach

A.I. Malawi[1*] and M. AlMansi[2]

[1] *Department of Economics – Yarmouk University*
Irbid – Jordan

[2] *Economic Researcher – Irbid – Jordan*

Abstract: This paper has implemented the Autoregressive Distributed Lag (ARDL) bounds testing approach to cointegration to explore the long-run and short-run relationships amongst the variables: labor productivity, economic globalization, and capital intensity in Jordan as a case study over the period 1980 to 2010.

The empirical evidence suggests that capital intensity is beneficial to labor productivity in the short-run and long-run. Whereas economic globalization is found to have a positive and a highly significant influence on labor productivity in the long-run, but this influence is found to be negative in the short-run. The contradiction between these two effects of economic globalization may be due to the fact that globalization may bring about the upgrading of skills through the importation or adoption of superior production technology and innovation, which usually needs a longer time.

The equilibrium correction coefficient (ECM (-1)) estimated (-0.25900) is highly significant (1% level) and has the correct sign. It shows that the system corrects its last period disequilibrium (the speed of adjustment to restore equilibrium in the dynamic model) by approximately 26% a year; i.e. about 26% of disequilibria from the previous year's shock converge back to the long-run equilibrium in the current year, which may be considered a fairly high speed of adjustment to equilibrium after a shock. The highly significant error correction term confirms the existence of long-run relationship.

Since economic globalization is found to play a supporting role in enhancing the Jordanian labor productivity in the long-run, a policy suggestion for enhancing labor productivity in Jordan will be through encouraging and enhancing inflow of foreign direct investment, transfer of technology, and economic openness.

Keywords: Globalization, Labor Productivity, Jordan, ARDL Approach

1. NTRODUCTION

Globalization and labor productivity are linked through various channels including trade liberalization or economic openness, being exposed to skilled guest labor or new technology and foreign direct investment (FDI). FDI is often linked with inflow of new technology to the host country. Compared to developing countries, developed countries usually use the most recent production technology. Therefore, spill over effect of technology can occur from the developed countries, the origin of FDI to the FDI recipient developing countries. The spill over effect enhances labor productivity through the acquisition of new technology (Ismail et al., 2013). The greater exposure to globalization might lead to skill upgrading. The higher the globalization, the higher is the exposure of domestic operations to operations with

superior productivity (Gersbach, 2002). Therefore, the question that might arise is how far labor productivity can be affected by economic globalization?. The main objective of this paper is to investigate the impact of economic globalization on labor productivity in the Jordanian economy. This study is expected to add valuable to the existing literature on Jordan.

The study uses a more recent data analysis technique; the bounds testing cointegration approach by Pesaran et al. (2001), which is considered more robust for small sample nature of the time series used.

The layout of the paper is the following. Section 2 reviews the theoretical and empirical literature. Section 3 describes data and variables. The methodology is introduced in section 4. The econometric analysis and results are presented in Section 5. Some concluding

E-mail: ahmad.malawi@yahoo.com, marammansi@hotmail.com

remarks with some recommendations are provided in Section 6.

2. THEORETICAL AND EMPIRICAL LITERATURE REVIEW

Globalization offers opportunities for workers to achieve higher levels of economic prosperity (Devadason & Meng, 2009), where globalization helps to accelerate accumulation of physical and sustained technological transfer. With globalization, workers in all countries are compelled to compete with each other for jobs via increasing their efficiency and productivity to meet the international standards of the global labor markets. According to Gallin (2000), the emergence and development of a global labor market is the most important social consequence of globalization. Advocates of liberalization argue that opening up local markets to foreign competition and foreign direct investment will improve the productivity of domestic industry, resulting in more efficient allocation of resources and greater overall output (Kiran and Kaur, 2007).

Alam et al. (2013) investigated the relationship between foreign direct investment and labor productivity in 19 OECD member countries, and found bidirectional causalities between both variables in the long-run.

Sjoholm (1997) has analyzed the impact of international trade on labor productivity in Indonesia, and found that this impact is positive. Hine and Wright (1997) have found that exposure to trade raises labor productivity growth in the United Kingdom.

Ismail et al. (2011) analyzed the impact of globalization on labor productivity in the Malaysian services sector using three indicators for globalization (FDI, foreign labor, and economic openness), and found that the globalization indicators have negative significant impact on labor productivity in the services sector.

3. DESCRIPTION OF DATA AND VARIABLES

The concept of economic globalization has two dimensions. First, actual economic flows (trade as a percent of GDP, foreign direct investment and stocks as a percent of GDP, portfolio investment as a percent of GDP, and income payments to foreign nationals as a percent of GDP). Second, economic restrictions (hidden import barriers, mean tariff rate, taxes on international trade as a percent of current revenues, and capital account restrictions). The KOF (Swiss Economic Institute) index of economic globalization; which is the most recent index, is based on a yearly basis and on a scale of one to hundred, where hundred is the maximum value and one is the minimum value. Higher values denote greater economic globalization.

Jordan has experienced a progress towards economic globalization in the form of: increasing economic openness, encouraging FDI, and opening labor market for guest labor, accession to the World Trade Organization (WTO), and privatization. Figure 1 caricatures the

development of the economic globalization index and labor productivity (labor productivity is measured by the amount of goods and services produced, or the amount of real GDP produced, by one labor) for Jordan over the period (1980-2010). Since Jordan's accession to WTO in year 2000, the economic globalization index and labor productivity showed, an approximately, an upward trend as figure 1 reveals.
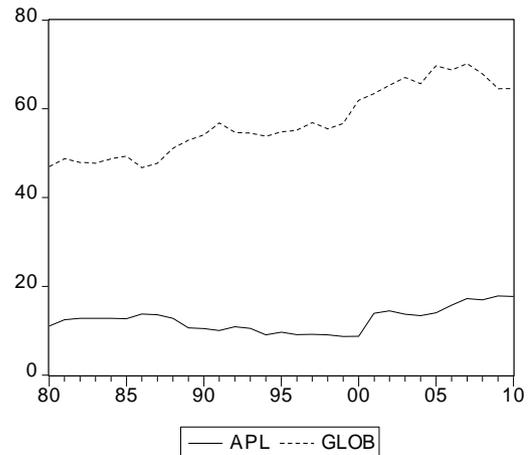
Figure 1.   Figure 1: Globalization Index (Glob) and Labor Productivity (APL) for Jordan

The Jordanian nominal GDP has increased from JD 1165 million in 1980 to JD 18762 million in 2010 with an annual growth of 9.7%. On the other hand, the annual growth rate of the real GDP during the same period is found to be 4.3%. The nominal capital stock increased from JD 7713.6 million in 1980 to JD 33879.7 million in 2010 with an annual growth rate of 5%, whereas the annual growth rate of labor is estimated to be around 2.92% during the same period. It is very clear that the capital stock grows faster than labor during the period of study.

Analysis of this paper uses annual time series data about Jordan including 31 observations, namely, for the period 1980 to 2010, for which data is available. Data on output, labor, and economic globalization are gathered from various sources like the Central Bank of Jordan, Department of Statistics in Jordan, and an index of economic globalization published by the KOF Swiss Economic Institute.

Since data on capital is not available for Jordan, the researchers estimated it by using the incremental capital-output ratio (ICOR) approach (Adelman and Chenery, 1966), which is very popular. The first step to generate capital stock is to calculate the overall ICOR for the period under study. Capital stock figure for the first year of the study period is obtained by multiplying overall ICOR by the gross domestic product (GDP) of that year. Subsequent figures of capital stock are derived by cumulating net capital formation (I) according to the following equation (Hammad, 1986):

$$ICOR(1980-2010) = \frac{\sum_{t=1980}^{2010} It}{GDP(2010) - GDP(1980)}$$

Where I and GDP are obtained from the bulletins of the Central Bank of Jordan.

4. METHODOLOGY

The main objective of this paper is to explore the relationship between real labor productivity and several independent variables, namely, real capital intensity and economic globalization.

Investigating of the impact of economic globalization on labor productivity is basically done based on the benchmark model (Cobb Douglas production function) that relates the factors of production to the level of output in any economy, which is assumed to take the following form:

$$Y = f(K/L) \qquad (1)$$

Where Y denotes the output level (real GDP), K denotes the amount of capital, and L denotes the amount of labor. Dividing both sides by L to get:

$$Y/L = f(K/L, 1) = f(K/L) \qquad (2)$$

Equation 2 implies that the average productivity of labor could be represented as a function of real capital intensity per labor. After adding the globalization index for Jordan (Glob) to equation 2, it will take the following form:

$$Y/L = f(K/L, Glob) \qquad (3)$$

Taking the natural log of both sides leads to the following equation:

$$Ln\,(Y/L)t = \ln A + \beta 1 \ln (K/L)t + \beta 2 \ln (Glob)t + ut \qquad (4)$$

Where Y/L is the real labor productivity, A could represent the technology level, K/L is the real capital intensity, L is total workers, Glob is an index of economic globalization. Y (real GDP) is drawn from the bulletins of Central Bank of Jordan, and L (Labor) is drawn from bulletins of the General Department of Statistics/ Jordan. Glob (KOF index of Globalization) is drawn from the KOF Swiss Economic Institute, whereas K is estimated according to the ICOR formula above.

The Y and K variables are deflated by the Jordanian consumer price index (at constant 2006 prices).

The Y and K variables are deflated by the Jordanian consumer price index (at constant 2006 prices).

This paper utilizes an ARDL (Autoregressive Distributed Lag) approach of Pesaran and Pesaran (1997) and Pasaran et al. (2001), which has recently become an increasingly popular technique in econometrics (Bekhet & Matar, 2013) for the following reasons. Firstly; this approach has better small sample properties in contrast to other techniques, i.e. this approach is relatively more efficient in small or finite sample sizes (Fosu and Magnus, 2006) as is the case in this study. Secondly; it doesn't

require examining the stationarity or order of integration for the variables.

Pesaran and Pasaran (1997) argue that this approach can be applied to series irrespective of whether they are I(0), I(1), or a mix of the two. Thirdly; it allows the variables to have different optimal lags. Fourthly, ARDL approach helps in eliminating the problems resulting from nonstationary time series data (Aljarrah, 2010). Fifthly; by applying the ARDL technique we obtain unbiased estimates of the long-run model (Harris and Sollis, 2003). Sixthly; the ARDL approach helps us in separating the effect of the predictors into long-run and short-run effects. Finally; failure to test hypothesis due to endogeneity problems in Engle-Granger method that can be resolved by ARDL (Muhammad and Umer, 2010).

The ARDL approach can be implemented by doing two steps. First; guarantee the existence of estimation for a long-run equilibrium relationship in levels among the variables, if this equilibrium exists move to the next step (Aljarrah, 2010) . Second; estimate the parameters of the long-run equilibrium relationship and the short-run dynamic error correction model as follows:

$$\Delta\ln((Y/L)t) = \alpha + B1\ln((Y/L))\ t\text{-}1) + B2\ln((K/L)\ t\text{-}1)$$
$$+ B3\ln(Globt\text{-}1) + \sum_{i=1}^{P} \gamma 1i\Delta\ \ln((Y/L)\ t\text{-}i) + \sum_{i=1}^{K} \gamma 2i\Delta$$
$$\ln((K/L)t\text{-}i) + \sum_{i=1}^{m} \gamma 3i\Delta\ \ln(Globt\text{-}i) + \varepsilon t \qquad (5)$$

Where Δ is the first difference operator. Bi, i=1,2,3 represent the long-run coefficients and $\gamma 1i$, $\gamma 2i$, $\gamma 3i$ represent the short-run coefficients. εt is the random error term. And ln implies that all the variables are taken in logarithmic form as a kind of monotonic transformation.

5. EMPIRICAL INVESTIGATION

Much empirical research has been carried out over the past few years on the causes of labor's productivity, but the work that has discussed the relationship between globalization and labor's productivity is very limited.

Our investigation aims at providing a thorough analysis of the impact of economic globalization on labor productivity in Jordan.

A. 5.1 Unit Root Test for Stationarity:

Prior to multivariate analysis with the ARDL bounds test, the order of integration of the variables involved should be tested. This is to ensure that none of the variables is integrated of order 2 or beyond, so as to avoid spurious results. According to Quattara (2004) in the presence of I(2) variables or beyond, the results obtained will not be valid because the bounds test is based on the assumption that the variables are I(0), I(1) or, a mix of both. The traditional Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests are widely used for determining the stationarity status. The fact that the unit root is the null hypothesis to be tested.

Results of the unit root test with constant for all series are reported in Table 1. So; the null hypothesis of unit root test for the levels of the three variables is not rejected at 10% significance level according to both tests. The results of our tests suggest that all of the variables include a unit root but their first differences are stationary. Repeating both tests with trend and intercept; results not reported confirm the earlier results. Unfortunately, when both tests were repeated without intercept and trend, similar results for ln(Y/L) and ln(K/L) were reached, but ln(Glob) is found to be stationary at its level. The results are not reported to conserve space. This implies that there is a possibility of the variables to be integrated of different orders, i.e. order one; I(1), or of order zero; I(0), or a mix of both.

Since there is some degree of uncertainty concerning the integration order of the variables in question, the use of ARDL approach is an appropriate technique choice since it doesn't require the assumption that the variables are integrated of the same order.

TABLE 1: UNIT ROOT TEST (WITH CONSTANT)

Variable	Augmented Dickey Fuller		Phlillips-Perron	
	ADF (calculated)	*10% level*	*PP (calculated)*	*10% level*
ln (Y/L): level	-0.99	-2.62	-0.91	-2.62
ln (Y/L): first difference	- 3.95*	-2.62	- 4.82*	- 2.62
ln (K/L): level	-1.69	-2.62	-1.74	-2.62
ln (K/L): first difference	-3.54*	-2.62	-4.85*	-2.62
ln (Glob): level	-0. 87	-2.62	-1.07	-2.62
ln (Glob): first difference	-3.46*	-2.62	-5.08*	-2.62

Note: * denotes the rejection of unit root hypothesis at 10% level.

B. 5.2 ARDL Bounds Tests for Cointegration:

According to this approach, there are two types of relationships among the variables; long-run relationship and short-run dynamic relationship (Malawi, 2013). Both relationships depend on choosing the optimal lag length. Schwartz Bayesian Criterion (SBC), which minimizes lag length, is the most appropriate for yearly data (Pesaran et al., 1999).

In the first step of the ARDL analysis, we use F-test for the presence of long-run relationship. Table 2 reports the results of the calculated F-statistic when each variable is considered as a dependent variable (normalized) in the OLS regression. The results show that the null hypothesis of no cointegration among the variables in the first two cases is rejected since the values of the calculated F-statistic are greater than the upper bound critical values at 10% level of significance, implying the existence of long-run cointegration relationships amongst the variables when the regressors are normalized on both labor productivity (Y/L) and capital intensity (K/L) variables (Table 2). However, based on our model, we used (Y/L) as the dependent variable.

The decision of rejecting or accepting the null hypothesis of no cointegration among the variables (H0) is based on the following procedures (Bekhet and Matar, 2013):

- If the F-statistic > upper bound, H0 can be rejected and the variables are cointegrated.

- If the F-statistic < lower bound, H0 cannot be rejected and the variables are not cointegrated.

- If the F-statistic falls between the lower and upper critical values, the result is inconclusive.

TABLE 2: RESULTS FROM BOUND TESTS

Equation	F-Statistic (Calculated)	Decision
Fln(Y/L) [ln(Y/L)/ ln(K/L), ln(Glob)]	3.31	Cointegration
Fln(K/L) [ln(K/L)/ ln(Y/L), ln(Glob)]	3.54	Cointegration
Fln(Glob) [ln(Glob)/ ln(K/L), ln(Y/L)]	0.60	No Cointegration

- At 1%: Lower bound critical = 3.65 and Upper bound critical value = 4.66
- At 5%: Lower bound critical = 2.79 and Upper bound critical value = 3.67
- At 10%: Lower bound critical = 2.37 and Upper bound critical value = 3.20

Note: Critical Values are taken from Pesaran et al. (2001), Table CI(ii) Case II.

TABLE 3: ARDL ESTIMATES OF REAL AVERAGE PRODUCT OF LABOR (LN(Y/L)): ARDL (1,1,1)
SELECTED BASED ON SCHWARTZ BAYESIAN CRITERION (SBC)

First): The Long-Run Estimation Results			
	Elasticity	t-statistics	P-Value
Intercept	-2.5247*	-4.5900	0.000
ln(K/L)	0.8763*	14.1619	0.000
Ln(Glob)	2.2680*	-2.9323	0.010
R-Squared = 0.98027	Adjusted R-Square= 0.97578		
D-W Statistic= 2.1402	F-Statistic: 218.5724 [Prob.= 0.000]		
Diagnostic Tests Serial Correlation: χ2(1)= 0.48736 [Prob.=0.485] Functional Form: χ2(1)= 0.33819 [Prob.=0.561] Normality: χ2(2)= 1.2093 [Prob.=0.546] Heteroscedasticity: χ2(1)= 2.2270 [Prob.=0.136]			
Second): The Short-Run Dynamic for Δ(ln(Y/L)): Error Correction Representation for the Selected ARDL Model			
	Coefficient	t-statistics	P-Value
Intercept	-2.5247*	-4.5900	0.000
Δ ln(K/L)	0.87583*	14.1619	0.000
Δ ln(Glob)	-0.57750*	-2. 9323	0.007
ECM(-1)	-0.25900*	-3. 6647	0.001
ECM = ln(Y/L) - 0.87626ln (K/L) -2.2679 ln(Glob) +9.7481(Constant)			

Note: *: denotes statistical significance at 1% level.
Source: Output of Microfit Package, Version 4.0

The long-run coefficients estimates from the ARDL specification along with the short-run dynamics are presented in table (3).

As table (3) reveals, the estimated coefficients of the long-run relationship are all statistically significant at 1% level, indicating that an increase in capital intensity or globalization leads to an increase in average product of labor. The findings show that, in the long-run, globalization has a higher elasticity with respect to labor productivity (2.2680%) and it has more effectiveness on labor productivity compared to capital intensity. The elasticity of capital intensity with respect to labor productivity is found to be (0.8763%). It seems that globalization has a higher power than capital intensity, in the long-run, in explaining the labor productivity variable.

The results of the short-run dynamics coefficients of the conditional error correction version of the ARDL model in table (3) are not exactly in line with the long-run ones. The short-run impact of globalization is found to be negative on labor productivity (-0.57750%) and it is highly significant (1% level). The contradiction between the short-run and long-run effects may be due to the fact that globalization may bring about the upgrading of skills through the importation or adoption of superior production technology and innovation (Fosu and Magnus, 2006), which usually needs a longer time. On the other hand, the short-run impact of capital intensity is maintained to be positive on labor productivity and it is highly significant (1% level).

The equilibrium correction coefficient (ECM(-1)) estimated (-0.25900) is highly significant (1% level) and has the correct sign. It shows that the system corrects its last period disequilibrium (the speed of adjustment to restore equilibrium in the dynamic model) by approximately 26% a year; i.e. about 26% of disequilibria from the previous year's shock converge back to the long-run equilibrium in the current year, which may be considered a fairly high speed of adjustment to equilibrium after a shock. The highly significant error correction term confirms the existence of long-run relationship.

The regression of the underlying ARDL model fits very well at R2=98.03% and adjusted-R2= 97.6%. The model also passes the diagnostic tests against serial correlation, functional form specification, normality for errors, and heteroscedasticity (table 3).

The cumulative sum (CUSUM) plot, as shown in figure 2, indicates stability in the coefficients over the whole sample period. The results of this test show that the residuals are inside plus and minus two standard errors band, which suggest stability in the parameters of the model equation; which in turn implies that we can accept the null hypothesis of constant parameters for the whole period of this study at 5% level of significance.
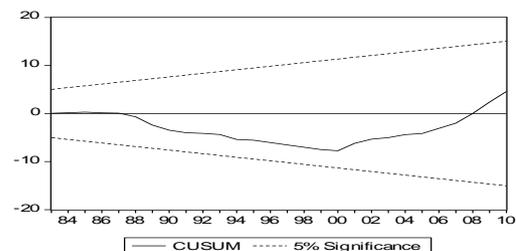
Figure 2.   Figure 2: CUSUM Test for Stability

6. CONCLUDING REMARKS AND AVENUES FOR FUTURE RESEARCH

This study has employed the bounds testing (ARDL) approach to cointegration to examine the long-run and short-run relationships between average product of labor from one side and capital intensity (capital-labor ratio) and globalization from another side, using Jordan as a case study.

The bulk of previous empirical studies has produced inconclusive and elusive results concerning the potential impact of economic globalization on labor productivity. The empirical evidence presented in this paper suggests that capital intensity and globalization are important in explaining labor productivity in Jordan. Economic globalization is found to have a positive impact on labor productivity in the long-run, but this impact is negative in the short-run, and both effects are highly significant. The associated equilibrium correction term is also significant confirming the existence of long-run relationships. The critical issue for reaching to mixed results for the previous studies is that the results may differ for different time periods or/and different countries or regions or/and different models used.

In this research paper, economic globalization is found to play a supporting role in enhancing the Jordanian labor productivity in the long-run. From the results, a policy suggestion for enhancing labor productivity in Jordan will be through encouraging and enhancing inflow of FDI, transfer of technology, and economic openness.

In the long-run and short-run equations, the capital intensity has a positive sign expressing the fact that capital intensity is beneficial to labor productivity in Jordan, which is consistent with economic theory.

In our minds, there exist some interesting subjects or some avenues for future research. First; it is possible to conduct a time-series cross-sectional study at level of the Arab countries since dealing with larger sample size might give more accurate results. Second; it is possible to think of estimation different models or/and different time periods.

REFERENCES

[1] Adelman, I. and Chenery, H. B. (1966), *"Foreign Aid and Economic Development: The Case of Greece"*, The Review of Economics and Statistics, XL VIII, (1), February.

[2] Alam, Abdullah, and Arshad, M. Usman, and Rajput, WasimUllah (2013), *"Relationship of Labor Productivity, Foreign Direct Investment and Economic Growth: Evidence from OCED Countries"*, Journal of Business and Management Sciences, Vol.1, Issue 6, PP 133-138.

[3] Aljarrah, Mohammed A. (2010), *Budget Deficits and the Behavior of the Real Exchange Rate: The Case of Saudi Riyal*. Journal of King Saud University (Administrative

Sciences) King Saud University. Riyadh, Kingdom of Saudi Arabia, 1(21).

[4] Bekhet, Hussain Ali, and Matar, Ali (2013), *"Cointegration and Causality Analysis Between Stock Market Prices and their Determinants in Jordan"*, Economic Modelling, 35, PP 508-514.

[5] Devadason, Evelyn S. and Meng, Chan Wai (2009), *"Globalization of the Malaysian Manufacturing Sector: An Agenda for Social Protection Enhancement"*, International Journal of Economics and Finance, Vol. 1, No. 1, February, PP 86-97.

[6] Fosu, Oteng-Abayie Eric and Magnus, Frimpong Joseph (2006), *"Bounds Testing Approach to Cointegration: An Examination of Foreign Direct Investment, Trade, and Growth Relationships"*, American Journal of Applied Sciences 3 (11), PP 2079-2085.

[7] Gallin, D (2000), *"Trade Unions and NGOs: A Neccassry Partner for Development"*, Paper No.1, Civil Society and Social Movements Program, United Nations Research Institute for Social Development, June.

[8] Gersbach, Hans (2002), *"Does and How Does Globalisation Matter at the Industry Level?"*, Blackwell Publisher Ltd.

[9] Hammad, Khalil (1986), *"An Aggregate Production Function for Jordan"*, METU Studies in Development, 13, (3-4), PP 287-298.

[10] Harris, R. and Sollis, R. (2003), *"Applied Time Series Modelling and Forecasting"*. Wiley, West Sussex.

[11] Hine, R. and Wright, P. (1997), *"Trade and Manufacturing Employment in the United Kingdom"*. In International Trade and Labor Markets (ed. J. Borkakoti and C. Millner), London, Macmillan.

[12] Ismail, Rahman, and Rosa, Aliya, and Sulaiman, Noorasiah (2011), *"Glabalisation and Labour Productivity in the Malaysian Services Sector"*, a paper submitted to the International Conference on Sociality and Economics Development IPEDR Vol. 10, Singapore.

[13] Kiran, Ravi and Kaur, Manpreet (2007), *"Is Liberalisation Associated With Higher Productivity? A Case Study of Punjab Manufacturing"*, The Journal of Business Prospective, Vol.11, No.4, October-December, PP 53-66.

[14] KOF Swiss Economic Institute, Internet: http://Globalization.kof.ethz.ch/query/

[15] Malawi, Ahmad Ibrahim (2013), *"The Output Effect of Foreign Aid and Foreign Direct Investment in Jordan: ARDL Modelling Analysis"*, Dirasat (Administrative Sciences), University of Jordan, Amman, Jordan, Vol. 40, No.2, July, PP 525-533.

[16] Muhammad, Sulaiman D. and Umer, Muhammad (2010), *"The Bound Testing Approach for Cointegration and Causality Between Financial Development and Economic Growth in Case of Pakistan"*, European Journal of Social Sciences, Vol. 13, No. 4, PP 525-531.

[17] Ouattara, B. (2004), *"Foreign Aid and Fiscal Policy in Senegal"*, Mimeo University of Manchester.

[18] Pesaran, M., Shin, Y., and Smith, R. (1999), *"Pooled Mean Group Estimation of Dynamic Heterogeneous Panels"*, Journal of the American Statistical Association, 94, 446, PP 621-634.

[19] Pesaran, M. and Pesaran, B. (1997), *Working with Microfit 4.0: Interactive Econometric Analysis*, Oxford University Press, Oxford.

[20] Pesaran, H., Shin, Y., and Smith, R. (2001), *Bounds Testing Approaches to the Analysis of Level Relationship*. Journal of Applied Econometrics, 16: 289-326.

[21] Sjoholm, F. (2010), "*Imports, Exports and Productivity: Results from Indonesian Establishment Data*", Working Paper Series in Economics and Finance 2, http://ideas.repec.org.